# SECTION 4 – RATING SYSTEMS

Iowa Sustainable Design Initiative

SECTION 4 – RATING SYSTEMS

# Sustainable Design Rating System

## Introduction

**Guide Relationship to LEED**

- The Iowa Sustainable Design Guide does not specifically focus on achieving a LEED rating but does explain how the guide can be used if a LEED rating is desired.
- LEED is becoming a nationally accepted standard for what constitutes a green building.
- desired.

There are several green building rating systems available to guide designers and owners in their quest for sustainable design. By using various methods, green building rating systems determine if a building is environmentally friendly. These rating systems evaluate not only the building and the building's interior environment, but also focus on the impact that the project has on the site and the surrounding environment. The rating system used for a design is typically selected based on the location of the project and the intended result. There are rating systems recognized internationally, locally to an area, and everything in between.

The Iowa Department of Natural Resources and Iowa Department of Administrative Services evaluated available rating systems to choose a system most appropriate for use with commercial buildings in Iowa. The criteria for selection included a nationally recognized system, the assurance of longevity for that system, and applicability to Iowa. After much evaluation and comparison, the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System was selected as the sustainable guideline that best represented the identified criteria. However, many other rating systems and state design initiatives were reviewed in the process and are mentioned in this section.

**LEED Rating Systems**

There are four LEED systems currently available:

- LEED Version 2.1 for New Construction or Major Renovations (LEED-NC);
- LEED for Existing Buildings (LEED-EB);
- LEED for Commercial Interiors (LEED-CI); and
- LEED Core & Shell.

Information on other rating systems under development is available at the USGBC LEED Rating System Web site (http://www.usgbc.org).

## What is LEED?

### Leadership in Energy and Environmental Design (LEED) Green Building Rating System

Developed by the U.S. Green Building Council (USGBC), the LEED rating system is based on points earned for achieving specific sustainable design criteria. LEED is a self-assessing system -- the applicant decides which credits are most appropriate to pursue for a project. When sufficient points are verified by the USGBC, a building is awarded a LEED certification. LEED was developed through consensus of USGBC members and is administered by the USGBC.

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The USGBC is a non-profit organization dedicated to promoting high-performance building and development that protects both the environment and building occupant health. The USGBC is comprised of interests that span the entire building industry, such as manufacturers, design and construction professionals, educators, environmentalists, and government agencies.

According to the USGBC, the LEED Green Building Rating System is a priority program of the USGBC. It is a voluntary, consensus-based, market-driven building rating system based on existing proven technology. It evaluates environmental performance from a “whole building” perspective over a building's life cycle, providing a definitive standard for what constitutes a “green building.” LEED is based on accepted energy and environmental principles and strikes a balance between known effective practices and emerging concepts. The development of LEED was undertaken by the USGBC’s membership, representing all segments of the building industry and is open to public scrutiny.

All LEED systems are organized by five sustainable design categories: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, as well as an additional category called “Innovation & Design Process”. Unique to the LEED Rating System, the Innovation and Design Process category rewards designers who successfully implement new, creative methods to increase a building’s sustainable performance. Because each building project is unique, this category recognizes sustainable solutions that do not neatly fit into the other LEED categories.

Within each LEED category, there are credits; that is, topics that have been identified as important for sustainable design. For example, in the Sustainable Sites category, there are credits titled Alternative Transportation and Urban Redevelopment. Each credit has one or more points associated with it.

In order to obtain a LEED Rating, at least 26 out of a possible 69 points must be achieved. In addition, there are seven prerequisites. The requirements associated with these prerequisites must be met in any LEED rated building. An example of a prerequisite is the requirement for a site sedimentation and erosion control plan.

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Because this guide is primarily for new commercial construction, the following details about LEED certification levels and LEED prerequisites and credits are related to LEED-New Construction (LEED-NC). This information will be useful regardless of which LEED systems you may be using as all LEED systems use LEED-NC prerequisites and credits as a baseline.

## LEED-NC Certification Ratings

There are four levels of LEED Certification:

| LEED-NC Certification Rating | Points Required out of 69 Possible Points |
|---|---|
| Certified | 26-32 |
| Silver | 33-38 |
| Gold | 39-51 |
| Platinum | 52 or more |

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| LEED Category | Credit | Points Available |
|---|---|---|
| **Sustainable Sites** | Site Selection | 1 |
| | Urban Redevelopment | 1 |
| | Brownfield Redevelopment | 1 |
| | Alternative Transportation | 4 |
| | Reduced Site Disturbance | 2 |
| | Storm water Management | 2 |
| | Landscape & Exterior Design to Reduce Heat Islands | 2 |
| | Light Pollution Reduction | 1 |
| | | **Total 14** |
| **Water Efficiency** | Water Efficient Landscaping | 2 |
| | Innovative Wastewater Technologies | 1 |
| | Water Use Reduction | 2 |
| | | **Total 5** |
| **Energy & Atmosphere** | Optimizing Energy Performance | 10 |
| | Renewable Energy | 3 |
| | Additional Commissioning | 1 |
| | Ozone Depletion | 1 |
| | Measurement & Verification | 1 |
| | Green Power | 1 |
| | | **Total 17** |
| **Materials & Resources** | Building Reuse | 3 |
| | Construction Waste Management | 2 |
| | Resource Reuse | 2 |
| | Recycled Content | 2 |
| | Local/Regional | 2 |
| | Rapidly Renewable Materials | 1 |
| | Certified Wood | 1 |
| | | **Total 13** |
| **Indoor Environmental Quality** | Carbon Dioxide Monitoring | 1 |
| | Increase Ventilation Effectiveness | 1 |
| | Construction IAQ Required Management Plan | 2 |
| | Low-Emitting Materials | 4 |
| | Indoor Chemical and Pollutant Source Control | 1 |
| | Controllability of Systems | 2 |
| | Thermal Comfort | 2 |
| | Daylight and Views | 2 |
| | | **Total 15** |
| **Innovation & Design Process** | Innovation in Design | 4 |
| | LEED Accredited Professional | 1 |
| | | **Total 5** |
| | **LEED POINTS AVAILABLE** | **69** |

**LEED Registered Building**
A LEED Registered Building is one that has been registered with the USGBC by paying a small fee and providing basic project information. To be registered means that a representative individual or group intends to have a building become LEED certified.

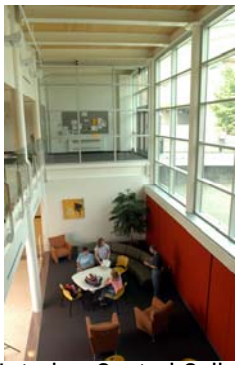
**LEED Certified Building**
A LEED Certified Building is one that has completed the review and approval process and has been awarded an official rating by the USGBC.

# Sustainable Design Rating System

"The basic sciences are a key part of a liberal arts education, so the building that houses them needs to be inspiring to students who study and learn there and must reflect the college's commitment to environmental stewardship and sustainable design. The new Vermeer Science Center achieves these goals."

*David Roe, President, Central College*

Front –entry, Central College Vermeer Science Center renovation and addition; Pella, Iowa



Interior, Central College Vermeer Science Center renovation and addition, Pella, Iowa

In September 2003 the first LEED building in Iowa was certified – the Vermeer Science Center located at Central College in Pella, Iowa. It received a LEED Version 2.0 Silver Certification. For more information, see the USGBC LEED website at:
**http://www.usgbc.org/LEED/LEED_main.asp**

## LEED Accredited Professional

According to the USGBC, LEED Accredited Professionals ™ are experienced building industry practitioners who have demonstrated their knowledge of integrated design and their capacity to facilitate the LEED certification process by passing the LEED Professional Accreditation exam. Having a LEED Accredited Professional work on a project is a good step toward assuring the LEED process is a success. Refer to **http://www.usgbc.org/** for information on the accreditation process.

## National and Local Rating Systems

As mentioned, there are other green building rating systems in addition to LEED, some which have been developed by government agencies or municipalities. Many of them are similar to, or supplements of, LEED. Two examples follow. Examples of state sustainable design programs and initiatives can be found in Appendix E.

### SPiRiT – Sustainable Project Rating Tool

The Sustainable Project Rating Tool (SPiRiT) was derived from the USGBC's LEED 2.0 Rating System and is primarily used by the Army Corps of Engineers. SPiRiT has been adapted to include additional rating factors appropriate to military projects and facilities. Projects are rated for sustainability in eight facility categories, including sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, facility delivery process, current mission, and future missions. The credits were developed to address facility life cycle phases, including programming, design, construction, commissioning, installation/base master planning and facilities operations, and maintenance. Rehabilitation, recycling, and disposal are also evaluated within the SPiRiT rating system. Much of the numbering system parallels, but does not match, LEED.

## Energy Star Building Label

Energy Star is a government-backed program helping businesses and individuals protect the environment through superior energy efficiency. The program and rating system are applicable to commercial and residential buildings.

The U.S. Environmental Protection Agency (EPA) provides an innovative energy performance rating system currently used by businesses across the country which creates savings and provides management with tools for measuring current energy performance, setting goals, tracking savings, and rewarding improvements. The Energy Star rating is the method the EPA uses to recognize top performing buildings. The Energy Star Building Label is awarded to buildings that exhibit high energy efficiency without sacrificing occupant safety and comfort. These buildings are given national recognition for their energy performance.


LEED Silver Certification – Plaque,
Central College Vermeer Science Center renovation and addition, Pella, Iowa

## International Rating Systems

### Green Building Challenge/Green Building Assessment Tool

In an international effort, the United States and 16 other countries participated in the Green Building Challenge 2000 to evaluate and improve the performance of green buildings. The challenge began as an effort to see which country had the greenest buildings and evolved into a cooperative process among countries to measure the performance of green buildings.

The Green Building Assessment Tool (GB Tool) is the software used to evaluate sustainable buildings. The goal is to use the GB Tool internationally, while taking into account regional or national conditions. The GB Tool helps to assess and evaluate the energy and environmental performance of three building types: schools, multifamily residences, and small-scale office buildings.

### Building Environmental Performance Assessment Criteria (BEPAC)

BEPAC is the United Kingdom's affiliate of the International Building Performance Simulation Association (IBPSA). Founded in 1987, BEPAC's goal is to improve the quality of building performance by encouraging the use and development of environmental analysis and prediction methods in building design and review. BEPAC seeks to accomplish this by working toward the standardization and use of appropriate building performance analysis and prediction methods, providing the tools and materials needed to the public for the analysis, sponsoring/co-sponsoring technical meetings and workshops in conjunction with the collaboration of other organizations and institutes, and the production of technical publications.

### Building Research Establishment Environmental Assessment Method (BREEAM)

The Building Research Establishment originally developed BREEAM in 1998 in the United Kingdom. BREEAM is now regarded as an industry benchmark for assessing a building's environmental quality and performance. BREEAM is a widely used international method of assessing building quality and performance in terms of energy efficiency, environmental impact, occupant health, operations, and management.

The Environmental Assessment Consortium provides specialized expert consultants who can assess, rate and certify new and existing projects within the BREEAM rating system.

According to the BREEAM website, BREEAM assesses the performance of buildings in the following areas:

- *Management*: overall management policy, commissioning site management and procedural issues;
- *Energy Use*: operational energy and carbon dioxide ($CO^2$) issues;
- *Health and Well-being*: indoor and external issues affecting health and well-being;
- *Pollution*: air and water pollution issues;
- *Transport:* transport-related $CO^2$ and location-related factors;
- *Land Use*: greenfield and brownfield sites;
- *Ecology*: ecological value conservation and enhancement of the site;

- *Materials*: environmental implication of building materials, including life-cycle impacts; and
- *Water*: consumption and water efficiency.

Developers and designers are encouraged to consider these issues at the earliest opportunity to maximize their chances of achieving a high BREEAM rating.

Credits are awarded in each area according to performance. A set of environmental weightings then enables the credits to be added together to produce a single overall score. The building is then rated on a scale of PASS, GOOD, VERY GOOD, or EXCELLENT and a certificate is awarded that can be used for promotional purposes.

# Sustainable Design Rating System

## Related Resources

| Contacts | Description | Contact Information |
|---|---|---|
| **Building Research Establishment Environmental Assessment Method (BREEAM)** | The Building Research Establishment (BRE) originally developed BREEAM in 1998 in the United Kingdom BREEAM is now regarded as an industry benchmark for assessing a building's environmental quality and performance. | Website:<br><br>**http://www.products.bre.co.uk/breeam/** |
| **Energy Star Building Label** | The Energy Star Building Label is awarded to buildings that exhibit high energy efficiency without sacrificing occupant safety and comfort. These buildings are given national recognition for their energy performance. | Web site:<br><br>**http://www.energystar.gov** |

## Related Resources (continued)

| Contacts | Description | Contact Information |
|---|---|---|
| **Green Building Challenge** | Green Building Challenge is an international collaborative effort to develop a building environmental assessment tool that exposes and addresses controversial aspects of building performance, and from which the participating countries can selectively draw ideas to either incorporate or modify into their own tools. | Website:<br><br>**http://www.eere.energy.gov/buildings/highperformance/gbc2000.html** |
| **Sustainable Project Rating Tool** | The Sustainable Project Rating Tool (SPiRiT) was derived from the U.S. Green Building Council's LEED™ 2.0 Green Building Rating System and is primarily used by the Army Corps of Engineers. | Website:<br><br>**http://www.cecer.army.mil/SustDesign/** |

## Related Resources (continued)

| Contacts | Description | Contact Information |
|---|---|---|
| **U.S. Green Building Council (USGBC)** | The U.S. Green Building Council is the nation's foremost coalition of leaders from across the building industry working to promote buildings that are environmentally responsible, profitable, and healthy places to live and work. | USGBC<br><br>1015 18th Street, NW, Suite 805<br>Washington, DC 20036<br>Telephone: (202) 828-7422<br><br>Website:<br><br>**http://www.usgbc.org** |

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